

WHAT IS CLAIMED IS:

1. An integrated circuit device, comprising:

a substrate having a plurality of active devices;

5 an interconnection level on the active devices, having a plurality of metal lines to provide interconnections between the active devices with a plurality of plugs;

a shielding level on the interconnection level, having an electromagnetic shielding pattern; and

10 a plurality of stitching studs passing through the substrate;

wherein the electromagnetic shielding pattern, the plugs, and the stitching studs are electrically connected to form an electromagnetic shielding housing of the integrated circuit device.

15 2. The integrated circuit device of claim 1, wherein the integrated circuit device further comprises:

a plurality of electrode pads formed on the shielding level for external electrical connection.

20 3. The integrated circuit device of claim 1, wherein the shielding level further comprises at least one passive element embedded in the shielding level.

4. The integrated circuit device of claim 1, wherein the integrated circuit device further comprises a protective level on the shielding level for protecting
25 the integrated circuit device.

5. A manufacturing method of an integrated circuit device, comprising:

providing a substrate;

forming a plurality of active devices on a first surface of the substrate;

5 forming a plurality of stitching studs passing through the substrate,
comprising:

 forming a plurality of trenches in a second surface of the
substrate;

 forming insulating films inside the trenches; and

10 filling the trenches with a conductive material to form the
stitching studs;

 thinning the substrate from the second surface;

 forming an interconnection level on the active devices, wherein the
interconnection level has a plurality of metal lines to provide interconnections
15 between the active devices with a plurality of plugs; and

 forming a shielding level on the interconnection level, wherein the
shielding level has an electromagnetic shielding pattern;

 wherein the electromagnetic shielding pattern, the plugs, and the
stitching studs are electrically connected to form an electromagnetic shielding
20 housing of the integrated circuit device.

6. The manufacturing method of claim 5, wherein the manufacturing
method further comprises:

 forming a plurality of electrode pads on the shielding level for external
25 electrical connection.

7. The manufacturing method of claim 5, wherein the shielding level further comprises at least one passive element embedded in the shielding level.

5 8. The manufacturing method of claim 5, wherein the manufacturing method further comprises forming a protective level on the shielding level for protecting the integrated circuit device.

9. The manufacturing method of claim 5, wherein the step of thinning the
10 substrate is before the step of forming the stitching studs.

10. The manufacturing method of claim 5, wherein the manufacturing method further comprises:

forming a plurality of stitching stud pads on the second surface with
15 respect to the stitching studs.

11. A manufacturing method of an integrated circuit device, comprising:
providing a substrate;

forming a plurality of active devices on a first surface of the substrate;

20 forming a plurality of stitching studs passing through the substrate,
comprising:

forming a plurality of first trenches in the first surface of the
substrate;

forming a plurality of second trenches in a second surface of the
25 substrate, wherein the second trenches match up with the first trenches;

forming insulating films inside the trenches; and

filling the trenches with a conductive material to form the stitching studs;

thinning the substrate from the second surface;

5 forming an interconnection level on the active devices, wherein the interconnection level has a plurality of metal lines to provide interconnections between the active devices with a plurality of plugs; and

forming a shielding level on the interconnection level, wherein the shielding level has an electromagnetic shielding pattern;

10 wherein the electromagnetic shielding pattern, the plugs, and the stitching studs are electrically connected to form an electromagnetic shielding housing of the integrated circuit device.

12. The manufacturing method of claim 11, wherein the steps of forming
15 the insulating films inside and filling the first trenches and the second trenches with a conductive material are separate steps.

13. The manufacturing method of claim 11, wherein the manufacturing method further comprises:

20 forming a plurality of electrode pads on the shielding level for external electrical connection.

14. The manufacturing method of claim 11, wherein the shielding level further comprises at least one passive element embedded in the shielding level.

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15. The manufacturing method of claim 11, wherein the manufacturing method further comprises forming a protective level on the shielding level for protecting the integrated circuit device.

5 16. The manufacturing method of claim 11, wherein the step of thinning the substrate is before the step of forming the second trenches.